

## **CHAPTER 3.0 AFFECTED ENVIRONMENT**

### **3.1 CHAPTER OVERVIEW**

Chapter 3.0 describes the existing environmental resources of the areas that would be affected if the Preferred Alternative were implemented. The descriptions, data, and analyses focus on the specific conditions or consequences that may result from implementing the Preferred Alternative as required by *NPS Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making*, which sets forth the policy and procedures by which the NPS will comply with NEPA (NPS 2001a). This chapter should not be considered a comprehensive description of all aspects of the environment within or surrounding the site.

A description of existing environmental conditions follows for a better understanding of planning issues and to establish a benchmark by which the magnitude of environmental effects of the Preferred Alternative and the No Action Alternative can be compared. The information in Chapter 3.0 is organized by the same environmental topics used to organize the impact analysis in Chapter 4.0.

### **3.2 GENERAL ENVIRONMENTAL SETTING**

Chapter 3.0 addresses the topics that were not dismissed from further consideration as described in Chapter 1.0. The topics are organized by physical environment; natural resources; socioeconomics; cultural, historic, and archaeological resources; hazardous materials; and visitor experience and park operations.

#### **3.2.1 Physical Environment**

This section discusses the physical environment at TUAJ, including soils and geology; water quality (hydrology, groundwater, and stormwater management); floodplains; and air quality.

##### **3.2.1.1 Geology and Soils**

Tuskegee is located in an intermediary zone between the Piedmont and Coastal Plain, referred to as the Fall Line Sandhills (NRCS 2003). The depth to bedrock at TUAJ is greater than 60 inches. The Natural Resources Conservation Service of Macon County has mapped the soils for

the County, but the maps have not yet been published (personal communication with Macon County Natural Resources Conservation Service 2004).

The soil series in the upland areas include Uchee loamy sand (UcD), Marvyn loamy sand (MnB), Bonifay loamy fine sand (BoB), and Compass loamy sand (CmB). The UcD series is very deep, well-drained soil and is found on hillslopes in the northern part of the county (NRCS 2003). The slopes are short and complex. Most areas of this map unit are used for woodland and a few areas are used for pasture or hay. The MnB series is very deep, well-drained soil and is found on side slopes of ridges in the northern part of the county. Slopes are generally long and smooth but may be short and complex (NRCS 2003). Most areas of this map unit are used for cultivated crops, pasture, or hay, and a few areas are used for woodland (NRCS 2003). The BoB series is a very deep, well-drained soil on summits of broad ridges in the uplands of individual areas of irregular shapes; slopes are generally long and smooth (NRCS 2003). The CmB series is a very deep, moderately well-drained soil on summits of broad ridges and high stream terraces. Slopes are generally long and smooth. Most areas are long and narrow, but some areas are broad or oblong.

The soil series in the floodplain areas include Eunola fine sandy loam (EuA) and Bethera clay loam (BeA). Although the EuA series is rarely flooded, due to the physical properties and high water table, it is considered undesirable for most construction or road equipment (NRCS 2003). The EuA series is very deep, moderately well-drained soil on low terraces that are parallel to major streams in the northern part of the county. Slopes are generally long and smooth. Most areas of this map unit are used for woodland or pasture and wetness is a moderate limitation. The BeA series is a very deep, poorly drained soil on low terraces and floodplains adjacent to major streams. This map unit is poorly suited to most urban uses, as it is subject to flooding for brief periods several times each year. The flooding, wetness, and slow permeability are severe limitations and low strength is a severe limitation affecting local roads and streets (NRCS 2003).

The definition of a hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA 2004). Hydric soils are one of three required criteria for a site to be characterized as a wetland and include soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Lists of hydric soils by state were created using criteria that were developed by the National Technical Committee for Hydric Soils. Of the six soil series that occur at TUAJ, only Bethera (BeA) is considered a hydric soil (USDA 2004). The BeA soil series is located along the streambanks of the unnamed tributary located southwest of the HCA. The criteria that defines BeA as a hydric soil includes the following: soils in Aquic

suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table at less than or equal to 1.0 foot from the surface during the growing season if permeability is less than 6.0 inches per hour in any layer within 20 inches (USDA 2004). Table 3-1 lists additional properties of the soil series at TUIA.

**Table 3-1: Important Properties of the Soil Series on TUIA**

Soil Series	Permeability	Available Water Capacity	Slopes	Shrink-Swell Potential	Flooding	Soil Constraints
UcD	Rapid in the sub/surface layer and moderately slow in the subsoil	Low	5 to 15 percent	Low	None	Complex topography and slopes limit the use of equipment; erosion is a severe hazard.
MnB	Moderately slow	Moderate	2 to 5 percent	Low	None	Slight limitations affect building sites and local roads/streets; moderate hazard of erosion.
EuA	Moderate in the subsoil and rapid in the substratum	High	0 to 2 percent	Low	Rare	Wetness is a moderate limitation.
BeA	Slow	High	0 to 1 percent	Moderate	Frequent	Flooding, wetness, and slow permeability are severe limitations.
CmB	Moderately slow	Moderate	1 to 3 percent	Low	None	Wetness and slow permeability are main limitations.
BoB	Rapid in the sub/surface layer and moderately slow in the subsoil	Low	1 to 5 percent	Low	None	Sandy texture, wetness, low fertility, and droughtiness.

Source: *Soil Survey of Macon County, Alabama, 2003* (NRCS 2003).

### 3.2.1.2 Water Quality

Alabama DEM administers programs to manage surface water quality. The Alabama Environmental Management (AEM) Act authorizes Alabama DEM to establish and enforce water quality standards, regulations, and penalties in order to carry out the provisions of state and Federal water quality laws. Water quality standards designate uses of surface waters and define criteria intended to protect those uses. Section 303(e) of the Federal Clean Water Act (CWA) requires that each state establish and maintain a continuing planning process (CPP) consistent with the CWA and pertaining to all navigable waters of the state. The state is responsible for managing its water quality program to implement the processes specified in the CPP. U.S. EPA

is responsible for periodically reviewing the adequacy of the state's CPP. Alabama's CPP is an umbrella document that provides the framework to coordinate and unify the activities and procedures necessary for maintaining waters of an acceptable quality throughout the state, in a manner consistent with the Alabama Water Pollution Control Act and the Federal Clean Water Act (Alabama DEM Water Division 2004a).

The Code of Alabama applies use classifications to waterbodies for "water quality criteria based on existing utilization, uses expected in the future, and uses not currently possible because of correctable pollution" (Alabama DEM Water Division 2004b). The assignment of use classifications considers the physical capability of waters to meet certain uses, although not all waters are included by name in the use classifications (see Table 3-2). Stream segments not included by name are considered to be acceptable for a "Fish and Wildlife" (F&W) classification, unless it can be demonstrated that such a generalization is inappropriate in specific instances. The two unnamed tributaries to Uphapee Creek located within the site do not have listed use classifications and are therefore considered acceptable for F&W classification.

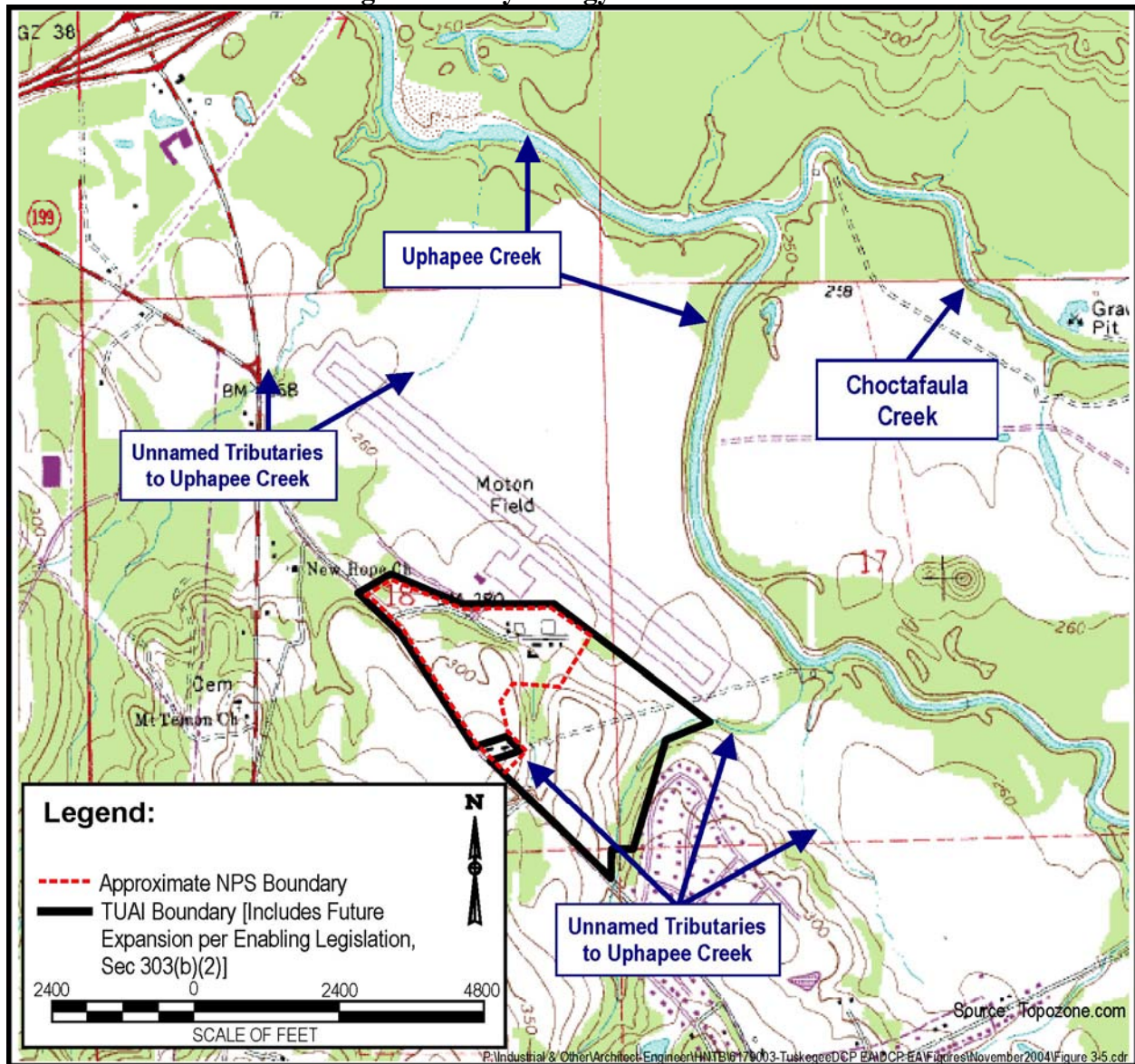
**Table 3-2: Water Use Classifications Utilized by the State of Alabama**

<b>Use Classifications</b>	<b>Symbol of Use Classification</b>
Outstanding Alabama Water	OAW
Public Water Supply	PWS
Swimming and Other Whole Body Water-Contact Sports	S
Shellfish Harvesting	SH
Fish and Wildlife	F&W
Limited Warmwater Fishery	LWF
Agricultural and Industrial Water Supply	A&I

### **Hydrology**

The main tributary in the vicinity of TUA I is Uphapee Creek, which is located north of the site (Figure 3-1). At least four unnamed tributaries to Uphapee Creek are located in the vicinity of the site and adjacent to the Moton Field Municipal Airport runway. Two of the unnamed tributaries are located on TUA I; one tributary bisects the central portion of the site and the other tributary is located along the southeast border of the site.

**Figure 3-1: Hydrology Characteristics**



## **Groundwater**

Groundwater aquifers in the vicinity of TUAI include the Fort Payne–Tuscumbia aquifer, the Watercourse aquifer, and the Gordo aquifer. The U.S. Geological Survey cataloging unit for the area is Hydrologic Unit 03150110 – Lower Tallapoosa. Fresh groundwater is withdrawn from this source, the majority of which is used for public supply. The closest groundwater monitoring well to the site is K 107 MTG-3. This well has a depth of 270 feet below land surface and is located in Montgomery County, Alabama, in Hydrologic Unit 03150201 – Upper Alabama.

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TUAI was formerly used and owned by the Department of Defense (DOD). A confined aquifer under pressure, referred to as an artesian spring, is located on the north face of the small hillside located on the south side of Hangar One. These springs were used for a water source during the airfield operations and supplied the cistern located on the southwest corner of Hangar One.

### **Stormwater Management**

The site has a very high water table and has historically flooded on a regular basis. Two major drainage ditch channels were excavated on either side of the airfield extending to the east and west, where the flow ultimately feeds into Uphapee Creek to the north and east of the site. Additional drainage structures designed for the site include the valley curb and gutter located at the top of the slope just north of the Skyway Club, into the western drainage ditch, reducing the amount of water flowing from the hillside. The concrete channel referred to as the gutter curb collects and diverts stormwater from the south hill at the base of the Skyway Club. The valley curb joins the gutter curb and extends to Chief Anderson Drive, where it discharges into an existing drop inlet. Water from the culvert at Chief Anderson Drive is discharged into the drain field near the existing airplane display and has formed a small wetland. From the wetland area, the water flows through a culvert under the drive to the current Moton Field Municipal Airport terminal and is discharged into a ditch, which takes the water offsite (Pond & Company 2002a).

Many areas within the HCA do not currently have adequate drainage offsite due to numerous silted or clogged inlets and pipes, and several low areas do not currently have drainage structures (Hartrampf 2003). Most of the existing structures drain into an unnamed tributary on the eastern portion of the HCA. All existing drainage structures are currently in need of repair (Hartrampf 2003).

#### **3.2.1.3 Floodplains**

*Floodplain Management*, Executive Order 11988 (Special Directive 93-4) issued May 24, 1977, directs all Federal agencies to avoid both long- and short-term adverse effects associated with occupancy, modification, and development in the 100-year floodplain when possible. Floodplains are defined in this order as “the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.” Flooding in the 100-year zone is expected to occur once every 100 years on average.

All Federal agencies are required to avoid building in a 100-year floodplain unless no other practical alternative exists. NPS has adopted guidelines pursuant to Executive Order 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. It goes on to require that, where practicable alternatives exist, Class I actions be avoided within a 100-year floodplain.

Class I actions include the location or construction of administration, residential, warehouse and maintenance buildings, non-excepted parking lots, or other man-made features that by their nature entice or require individuals to occupy the site. Class 2 actions are defined as those that would create an added disastrous dimension to a flood event. These include the location or construction of schools, hospitals, fuel storage facilities, museums, and archaeological artifact storage. Excepted actions include those which are functionally dependent on their proximity to water and those relative to park functions that are often located near water for the enjoyment of visitors but do not involve overnight occupation.

The 100-year floodplain as mapped by the Federal Emergency Management Agency (FEMA) is depicted in Figure 3-2. Floodplain Zones A12, B, and C are located within TUA1 and are defined in Table 3-3 below.

**Table 3-3: Floodplain Zones in the Project Vicinity**

<b>Floodplain Zone</b>	<b>Explanation of Zone</b>
A12	Areas of 100-year flood; base flood elevations and flood hazard factors determined to be 257 feet.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than 1 foot or where the contributing drainage areas is less than 1 square mile; or areas protected by levees from the base flood.
C	Areas of minimal flooding.

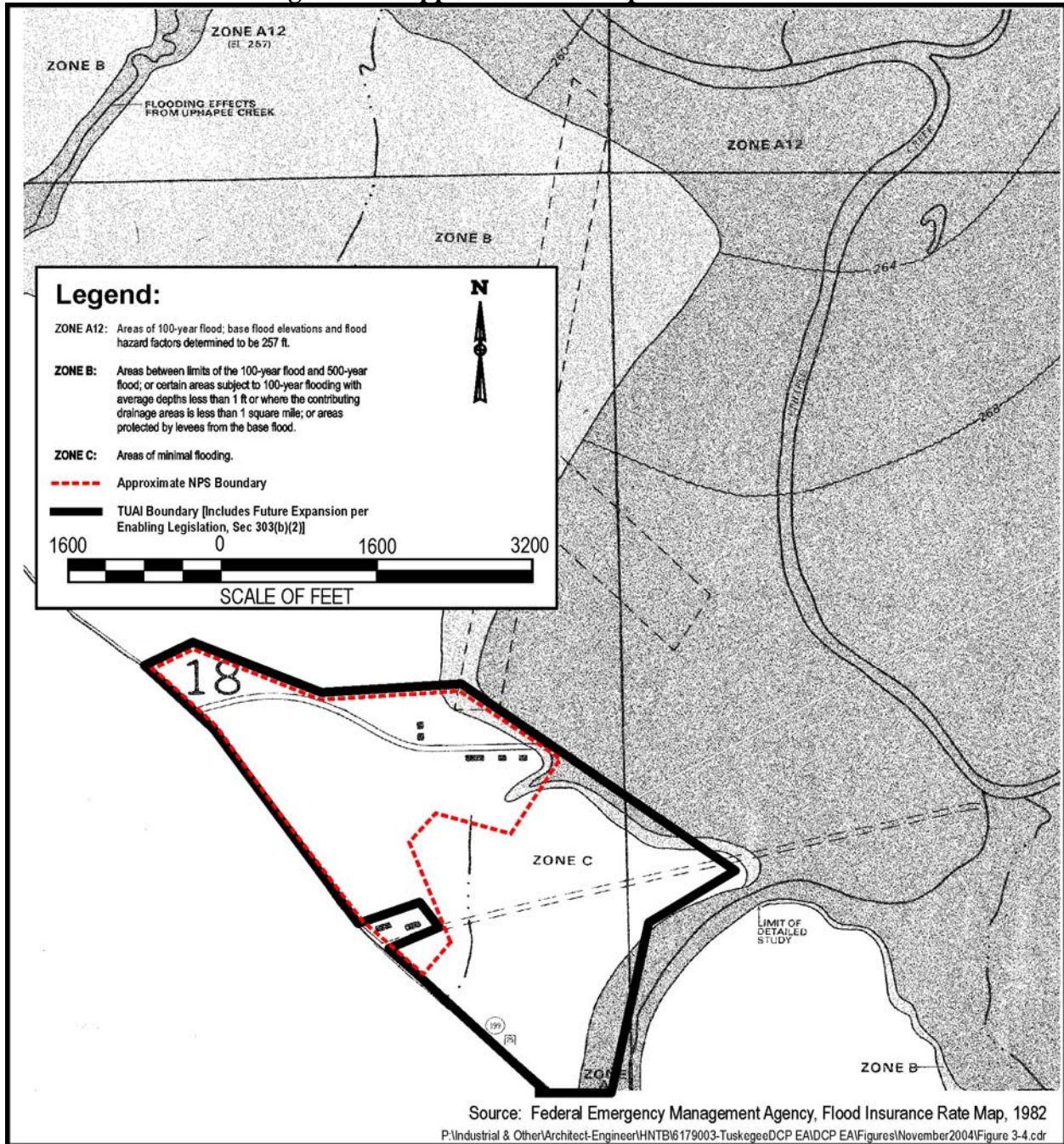
Source: *Flood Insurance Rate Map* [Federal Emergency Management Agency (FEMA) 1982].

#### **3.2.1.4 Air Quality**

The Federal Clean Air Act (CAA) requires all Federal agencies to comply with existing federal, state, and local air pollution control laws and regulations. The Environmental Protection Agency (EPA) sets primary National Ambient Air Quality Standards (NAAQS) required by the CAA for



**Figure 3-2: Approximate Floodplains Location**



air pollutants that cause health threats. The CAA defines six criteria pollutants. These criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter with size less than 10 μm<sup>3</sup> (PM<sub>10</sub>), nitrogen oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), and lead (Pb). Volatile organic compounds (VOCs) are not criteria pollutants, but are of interest since they participate in the formation of ozone. The CAA requires that each NAAQS be revised every five years to reflect the most

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recently available health information. Table 3-4 presents a summary of the pollutants, their characteristics, and their health and welfare impacts.

The Alabama DEM's Air Division is responsible for managing the State's air resources and implementing programs designed to ensure that Alabama's air quality meets Federal standards (Alabama DEM Air Division 2004). There are no air monitoring stations in Macon County, but there are monitors for O<sub>3</sub> and PM<sub>10</sub> in neighboring Phenix City, Russell County. In 2003, the highest recorded O<sub>3</sub> 1-hour value was 0.09 ppm, which compares to the NAAQS of 0.12 ppm; and the highest 8-hour value was 0.075 ppm, which compares to the 0.08 ppm standard. For PM<sub>10</sub>, the highest 24-hour value was 39 µg/m<sup>3</sup>, which compares to a 150 µg/m<sup>3</sup> standard; and the annual value was 21 µg/m<sup>3</sup>, which compares to a 50 µg/m<sup>3</sup> standard.

**Table 3-4: Air Pollutants and their Characteristics**

<b>Pollutant</b>	<b>Characteristics</b>
Particulates (PM <sub>10</sub> )	<ul style="list-style-type: none"> <li>• Mixture of solid particles and liquid droplets; fine particles (less than 10 micrometers) produced by fuel combustion, power plants, and diesel buses and trucks</li> <li>• Can aggravate asthma, produce acute respiratory symptoms, including aggravated coughing and difficult or painful breathing, and chronic bronchitis</li> <li>• Impairs visibility</li> </ul>
Sulfur Dioxide (SO <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Can cause temporary breathing difficulties for people with asthma</li> <li>• Reacts with other chemicals to form sulfate particles that are a major cause of reduced visibility in many parts of the country</li> <li>• Main contributor to acid deposition</li> </ul>
Nitrogen Oxides (NO <sub>x</sub> )	<ul style="list-style-type: none"> <li>• High temperature fuel combustion exhaust product</li> <li>• Can be an irritant to humans and participates in the formation of ozone</li> <li>• Reacts with other pollutants to form nitrate particles that are a significant contributor to visibility reduction in many parts of the country</li> <li>• Contributor to acid deposition</li> </ul>
Carbon Monoxide (CO)	<ul style="list-style-type: none"> <li>• Odorless, colorless gas produced by fuel combustion, particularly mobile sources</li> <li>• May cause chest pains and aggravate cardiovascular diseases, such as angina</li> <li>• May affect mental alertness and vision in healthy individuals</li> </ul>
Volatile Organic Compounds (VOCs)	<ul style="list-style-type: none"> <li>• Fuel combustion exhaust product</li> <li>• Consists of a wide variety of carbon-based molecules</li> <li>• Participates in the formation of ozone</li> </ul>
Ozone (O <sub>3</sub> )	<ul style="list-style-type: none"> <li>• Not directly emitted by mobile, stationary, or area sources</li> <li>• Formed from complex reactions between NO<sub>x</sub> and VOC emissions in the presence of sunlight</li> <li>• Occurs regionally due to multiplicity of sources</li> <li>• Can irritate the respiratory system</li> <li>• Can reduce lung function</li> <li>• Can aggravate asthma and increase susceptibility to respiratory infections</li> <li>• Can inflame and damage the lining of the lungs</li> <li>• Interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, other pollutants, and harsh weather</li> <li>• Damages the leaves of trees and other plants</li> </ul>

Pollutant	Characteristics
Lead (Pb)	<ul style="list-style-type: none"> <li>• Lead causes damage to the kidneys, liver, brain and nerves, and other organs and may lead to osteoporosis (brittle bone disease) and reproductive disorders</li> <li>• Lead exposure causes high blood pressure and increases heart disease and may lead to anemia</li> <li>• Lead can slow down vegetation growth and can cause reproductive damage in some aquatic life and cause blood and neurological changes in fish</li> </ul>

Areas of the country where air pollution levels persistently exceed the NAAQS standards are normally designated as nonattainment areas. TUAJ is located in Macon County, Alabama, which is part of the Columbus (Georgia)-Phenix City (Alabama) Interstate Air Quality Control Region (AQCR). The region is in attainment for all six criteria pollutants. In 1999, the latest year for which data are available, EPA reported the following emission totals for Macon County: PM<sub>10</sub> (4,436 tons), SO<sub>2</sub> (267 tons), NO<sub>x</sub> (3,257 tons), CO (22,694 tons), and VOC (2,479 tons) (U.S. EPA 2004).

### 3.2.2 Natural Resources

This section discusses natural resources including vegetation; wildlife; wetlands; ecologically critical areas; and rare, threatened, and endangered (RTE) species.

#### 3.2.2.1 Vegetation

##### Vegetation

##### **Historic Core Area Vegetation**

The majority of the present vegetation in and around the HCA is grassed with a few accent trees. Today, it is uncertain what the original landscaping consisted of, but a formal landscape plan from 1944 still exists for the site, accompanied by a planting list, that was completed by D.A. Williston. Most of the plants that were present in historic photographs of the site are not present today, and some were moved to Tuskegee University's campus after World War II. The HCA perimeter to the south and east contains a thick border of understory plants, dotted with pine and oak trees. The hillside south of Hangar Number One contains a grassed clearing around the Skyway Club building but is otherwise densely vegetated with privet, wisteria and other invasive exotic species. South of the HCA at the bottom of the slope where water from natural springs and storm water runoff collect is a collection of native aquatic plants. Native aquatic plants also occur in the open field northwest of Hangar Number One where the runoff water is ultimately dispersed (Pond & Company 2002a).

## **TUAI Vegetation**

The vegetation communities at TUAI are depicted on Figure 3-3. The following description of these vegetation communities is based on the *Cultural Landscape Report* that was completed for TUAI by Pond & Company (2002a).

### ***Bluff and Slope Forest***

The north- and east-facing slopes of the hill south of the hangars are characterized by mesic conditions, and although the area is sandy, the hillside is dotted with springs. Species present include loblolly pine (*Pinus taeda*), water oak (*Quercus nigra*), tulip-poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), sweetbay magnolia (*Magnolia virginiana*), flowering dogwood (*Cornus florida*), yaupon holly (*Ilex vomitoria*), and privet.

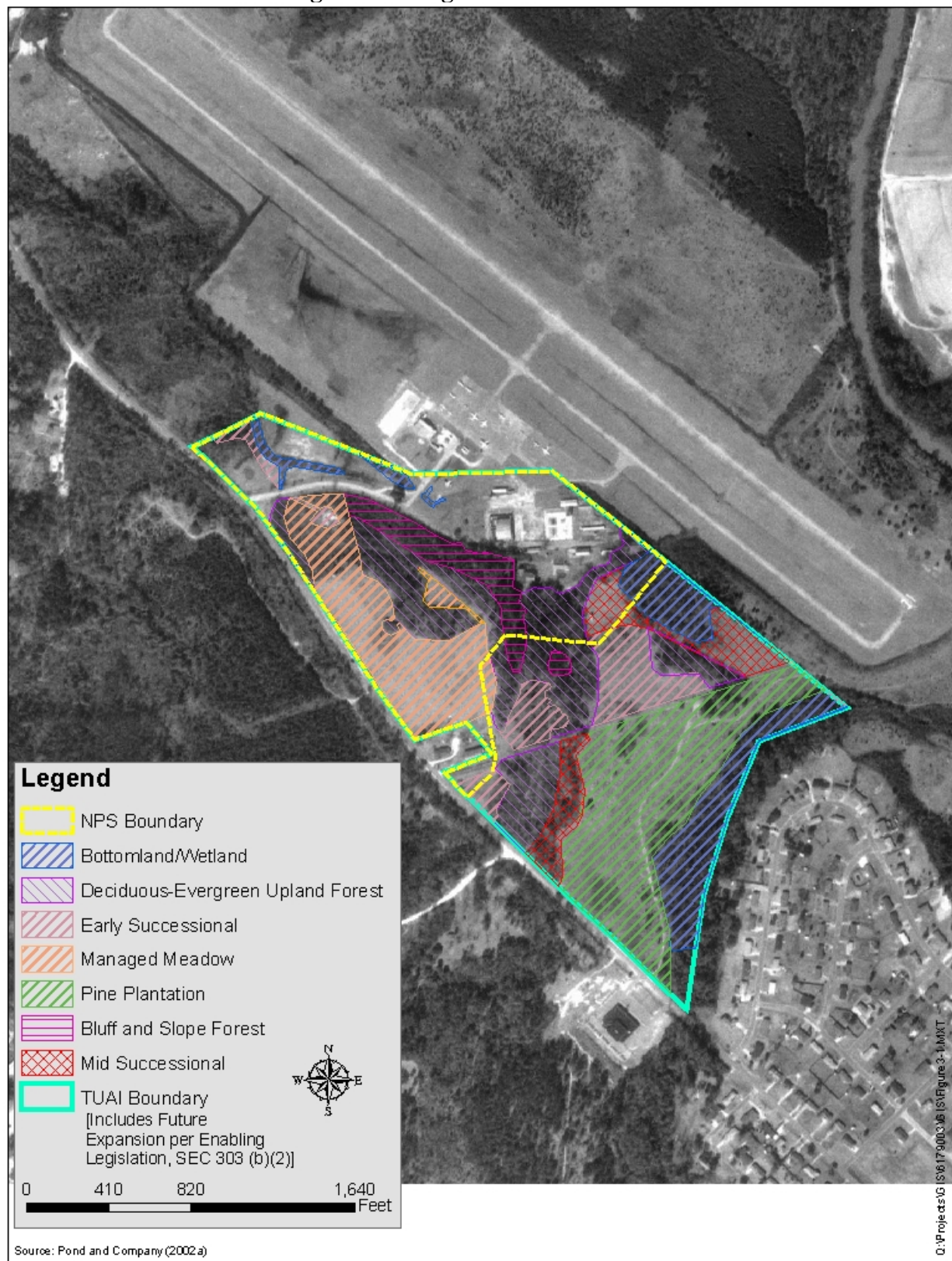
### ***Broadleaf Deciduous-Needleleaf Evergreen Upland Forest***

This plant community is found in areas with a thin sand top layer and underlying clay. Mixed pines and hardwoods characterize much of the site including the hilltop southwest of the HCA and along the stream corridor southeast of the HCA. Species present include loblolly pine, water oak, and sweetgum; these species often replace mockernut hickory (*Carya tomentosa*), post oak (*Quercus stellata*), and red oak (*Quercus rubra*) where the upper sand layer has eroded somewhat, perhaps due to farming practices. Other common trees found here are shortleaf pine (*Pinus echinata*), southern red oak (*Quercus falcata*), post oak, and laurel oak (*Quercus hemisphaerica*). The understory includes privet, yaupon holly, sparkleberry (*Vaccinium arboreum*), and greenbrier (*Smilax* sp.).

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**Figure 3-3: Vegetation Communities**



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### ***Early and Mid-Successional Lands***

Many areas formerly cleared in the central area of TUAJ are now in various stages of succession. The earliest stages include the species splitbeard bluestem (*Andropogon ternarius*), broomsedge (*Andropogon virginicus*), and aster species (*Aster* sp.). The presence of loblolly and shortleaf pine as well as eastern red-cedar (*Juniperus virginiana*), crabapple (*Malus* sp.), and numerous shrubs characterize mid-successional lands.

### ***Managed Meadows***

An area that was once farmland is now managed meadows in the west area of the site. Broomsedge and splitbeard bluestem cover the meadows along Chappie James Drive. The meadow areas are brush-hogged annually or bi-annually to suppress forest succession.

### ***Pine Plantations***

Other areas that were once farmland are now managed for timber. A pine plantation is located east of the unnamed tributary that bisects the site.

### ***Bottomland/Wetlands***

Wetlands are found at TUAJ along swales and forested creek borders. The creek adjacent to the tennis courts hosts species such as sweet bay magnolia (*Magnolia virginiana*), muscadine grape (*Vitis rotundifolia*), and crossvine (*Bignonia capreolata*). Swales that drain water from the hillside and runway support wetland vegetation. Characteristic species include sweetgum, willow oak (*Quercus phellos*), water oak, sweet bay magnolia, alder (*Alnus* sp.), elderberry (*Sambucus canadensis*), and milkweed (*Aclepias syriaca*).

### **Exotic Plants**

Many species planted during the operation of TUAJ are not native and are considered invasive in southeastern Alabama. An invasive plant inventory was completed for the site as part of the *Cultural Landscape Report* (Pond & Company 2002a). Figure 3-4 depicts the invasive species distribution at TUAJ. Most stands of invasive species are located along the two unnamed tributaries in the central, northwestern, and southeastern portions of the site (Pond & Company 2002a). The extent of invasives in these areas has been classified as moderate and severe, and occurs primarily in the unmaintained areas.

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**Figure 3-4: Invasive Species Distribution**



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The species privet and honeysuckle dominate the understory of the mesic forests, such as the bluff and slope forest. The hill to the east of the stream and near the hangars is more xeric and relatively free of invasive species. Kudzu (*Pueraria montana*) and bamboo (*Phyllostachys* sp.) grow in spot locations along the creek and have historically been planted along the steeper slopes to control erosion. Invasive plant species displace the otherwise native species and prevent natural regeneration of the forested areas.

### **3.2.2.2 Wildlife**

The site is characterized as more than 50 percent forested habitat and is dominated by a mixture of pine and hardwood forests. Since the other vegetated habitats identified at TUA I are associated with human activities and disturbance, wildlife in the area is limited to species tolerant of human activities. Mammal species such as white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), eastern gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), and opossum (*Didelphis virginiana*) could be present throughout the habitats identified as well as in the areas where human activity levels are high. Bird species vary with habitat type and cover. Species such as woodpeckers, chickadees, titmice, and nuthatches are likely to use the forested areas and pine plantations. Sparrows, meadowlarks, and blackbirds are likely to use the early and mid-successional areas, as well as the maintained habitat. Herons and ducks along with flycatchers and swallows may use areas along wetlands and creeks.

### **3.2.2.3 Wetlands**

*Protection of Wetlands*, Executive Order (E.O.) 11990, issued May 24, 1977, directs all Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation. Consistent with E.O. 11990 and *Director's Order #77-1: Wetland Protection*, the NPS adopted a goal of "no net loss of wetlands." Director's Order #77-1 states that for new actions where impacts to wetlands cannot be avoided, proposals must include plans for compensatory mitigation that restores wetlands on NPS lands where possible at a minimum acreage ratio of 1 to 1 (NPS Southeast Regional Office 1998).

NPS defines wetlands as vegetated areas that are flooded or saturated for a duration sufficient to allow development of at least one of the three wetland indicators described in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual. These are wetland hydrology,

hydric soils, or hydrophytic vegetation. See Section 3.2.1.1 for further details on hydric soils. This definition differs from that used by USACE to delineate jurisdictional wetlands. The USACE definition requires the presence of all three wetland indicators.

### ***Wetland Survey***

In September 2004, EA Engineering, Science, and Technology, NPS, and USACE conducted a wetland survey on the portion of TUAJ owned by NPS. A jurisdictional wetland determination has been requested from USACE for the approximately 1.49 acres of wetlands identified within the TUAJ boundary in September 2004 based on the 1987 USACE method. Most of the wetlands surveyed at the site were scrub-shrub vegetated areas located adjacent to or associated with surface water features and runoff and predominantly located to the north of Chief Anderson Drive (Figure 3-5). There were no wetlands mapped along the unnamed tributary to Uphapee Creek adjacent to and immediately south of the HCA. Additionally, potential wetlands were observed during the site visit along a second unnamed tributary to Uphapee Creek, on the easternmost boundary of TUAJ. These wetland areas have not been mapped to date, since they are located outside of activities proposed as part of this EA. Table 3-5 presents the types of wetlands surveyed at the site, acreages, and the dominant plant species and indicator status present in each wetland.

#### **Wetland Site 1**

Wetland 1 is located in the northern portion of TUAJ on the eastern side of Chappie James Drive. This wetland is a low-lying scrub-shrub depressional area that receives runoff from the road and adjacent drainage areas historically associated with a tributary of Uphapee Creek. Wetland 1 consists of 1.05 acres within the TUAJ boundary, but continues off-site as seen in Figure 3-5.

#### **Wetland Site 2**

Wetland 2 is a scrub-shrub linear wetland approximately 50 feet wide that runs parallel to the west side of TUAJ. This wetland is associated with runoff from the runway and potentially historical drainage from a tributary of Uphapee Creek. Wetland 2 consists of 0.16 acres within the TUAJ boundary, but continues off-site as seen in Figure 3-5.

#### **Wetland Site 3**

Wetland 3 is contiguous with Wetland 1 and is located between Chief Anderson Drive and Chappie James Drive. This emergent wetland is associated with a small drainage/seep and is approximately 5 feet in width, has flowing water, and is mowed nearly to the edge of the water on what appears to be a regular basis.

**Figure 3-5: Location of Wetlands Surveyed September 2004**



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#### Wetland Site 4

Wetland 4 is a forested/ scrub-shrub wetland located along Chief Anderson Drive. This wetland is located on a slope/hillside and is associated with a high water table and artesian wells; water was observed seeping from the slope during a site visit.

**Table 3-5: Wetland Site by Type, Area, and Observed Dominant Plant Species**

Wetland Site	Wetland Type <sup>1</sup>	Area (acres)	Observed Dominant Plant Species		Wetland Indicator Status <sup>2*</sup>
			Scientific Name	Common Name	
1	PSS1	1.05	<i>Acer rubrum</i>	Red maple	FACW
			<i>Gordonia lasianthus</i>	Loblolly bay	FACW
			<i>Ligustrum sp.</i>	Common privet	UNK
			<i>Liquidambar styraciflua</i>	Sweetgum	FAC+
			<i>Lonicera japonica</i>	Japanese honeysuckle	FAC-
			<i>Quercus nigra</i>	Water oak	FAC
			<i>Quercus phellos</i>	Willow oak	FACW-
			<i>Salix nigra</i>	Black willow	OBL
2	PSS1	0.16	<i>Acer rubrum</i>	Red maple	FAC
			<i>Alnus rugosa</i>	Speckled alder	FACW
			<i>Juncus effusus</i>	Common rush	FACW+
			<i>Salix nigra</i>	Coastal plain willow	OBL
			<i>Scirpus cyperinus</i>	Woolgrass	OBL
3	PEM1	0.04	<i>Juncus effusus</i>	Soft rush	FACW+
			<i>Ludwigia alternifolia</i>	Seedbox	OBL
			<i>Polygonum sp.</i>	Smartweed species	UNK
4	PFO1/PSS1	0.24	<i>Acer rubrum</i>	Red maple	FAC
			<i>Fraxinus pennsylvanica</i>	Green ash	FACW
			<i>Magnolia virginiana</i>	Sweetbay magnolia	FACW+
			<i>Onoclea sensibilis</i>	Sensitive fern	FACW
			<i>Quercus phellos</i>	Willow oak	FACW-
TOTAL		1.49			

Source: USACE 1987

<sup>1</sup>PSS1 = Palustrine, scrub-shrub, broad-leaved deciduous.

PEM1 = Palustrine, emergent, persistent.

PFO1 = Palustrine, forested, broad-leaved deciduous.

<sup>2</sup>OBL = Obligate. Greater than 99 percent estimated occurrence in wetlands.

FACW = Facultative Wetland. 67 to 99 percent estimated occurrence in wetlands.

FAC = Facultative. 34 to 66 percent estimated occurrence in wetlands.

FACU = Facultative Upland. 1 to 33 percent estimated occurrence in wetlands.

UNK = Unknown. Hydrophytic status not classified.

\* FACW, FAC, and FACU have +/- values to represent species near the wetter end of the spectrum (+) and species near the drier end of the spectrum (-).

#### 3.2.2.4 Ecologically Critical Areas

Public Law 95-632 (92 Stat. 375), signed in 1978, made extensive revisions to the Endangered Species Act of 1973. It requires consideration of the economic impact of designating critical habitat and review of the list of endangered and threatened species every five years. Critical habitat refers to specific geographic areas that are essential for the conservation of a threatened or endangered species (USFWS 2004a).

The State of Alabama includes critical habitats that support the federally endangered Alabama sturgeon (*Scaphirhynchus suttkusi*), the federally threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), the federally endangered Alabama beach mouse (*Peromyscus polionotus ammobates*), and the federally threatened avian species, the piping plover (*Charadrius melodus*) [Alabama Department of Conservation and Natural Resources (DCNR 2004a)].

Additionally, the Final Rule on the USFWS designation of critical habitat for 11 federally listed freshwater mussels in the Mobile River basin became effective on August 2, 2004. Three of the 11 mussels associated with the critical habitat designation, the fine-lined pocketbook (*Lampsilis altilis*), ovate clubshell (*Pleurobema perovatum*), and southern clubshell (*Pleurobema decisum*), have the potential to exist at TUA I. The ovate clubshell and southern clubshell are listed as federally endangered species and the fine-lined pocketbook is listed as a federally threatened species (Alabama DCNR 2004b). The USFWS has indicated through agency consultation letters that the unnamed tributary at TUA I drains into a segment of Uphapee Creek that has been designated critical habitat for these three mussel species (USFWS 2004b).

The piping plover and the Alabama beach mouse are associated with coastal habitats. The critical habitat for the piping plover is only associated with the wintering population of the species, which includes only areas adjacent to the Gulf of Mexico and Mobile Bay shorelines (USFWS 2004a). The Alabama beach mouse inhabits areas in the sand dunes of the Fort Morgan peninsula on the Alabama coast (Earth Justice 2004).

None of these species have been documented at TUA I; therefore, there would be no impacts from the proposed action.

### 3.2.2.5 Rare, Threatened, and Endangered Species

Section 7 of the Endangered Species Act requires that USFWS be consulted as to whether any species that is listed or proposed to be listed may be present in the area affected by the proposed action. Consultation with Mobile District USACE and USFWS determined that there are five federally listed threatened or endangered species (two birds and three mussels) known to occur in Macon County, Alabama (Alabama DCNR 2004b). Resource agencies in the State of Alabama do not currently have the jurisdiction to protect plant species unless the species is federally listed. There are no federally listed botanical species for Macon County at this time. The two listed birds include the species red-cockaded woodpecker (*Picoides borealis*) and wood stork (*Mycteria americana*). The three mussels include the species southern clubshell, ovate clubshell mussel, and fine-lined pocketbook. Further consultation with Alabama DCNR included the five species discussed above and the following state protected species: southeastern pocket gopher (*Geomys pinetis*), gopher tortoise (*Gopherus polyphemus*), crystal darter (*Crystallaria asprella*), and Alabama map turtle (*Graptemys pulchra*). See Table 3-6 for status. Additionally, the bald eagle (*Haliaeetus leucocephalus*) and American peregrine falcon (*Falco peregrinus anatum*) may occur in any county if suitable habitat exists.

**Table 3-6: Listed Species of Macon County, Alabama**

Scientific Name	Common Name	Protection Status
<b>AVIAN SPECIES</b>		
<i>Mycteria Americana</i>	Wood stork	Endangered
<i>Picoides borealis</i>	Red-cockaded woodpecker	Endangered
<b>MAMMALIAN SPECIES</b>		
<i>Geomys pinetis</i>	Southeastern pocket gopher	State Protected
<b>REPTILE AND AMPHIBIAN SPECIES</b>		
<i>Gopherus polyphemus</i>	Gopher tortoise	State Protected
<i>Graptemys pulchra</i>	Alabama map turtle	State Protected
<b>FISH SPECIES</b>		
<i>Crystallaria asprella</i>	Crystal darter	State Protected
<b>INVERTEBRATE SPECIES</b>		
<i>Lampsilis altilis</i>	Fine-lined pocketbook mussel	Threatened
<i>Pleurobema decisum</i>	Southern clubshell mussel	Endangered
<i>Pleurobema perovatum</i>	Ovate clubshell mussel	Endangered

Agency correspondence letters are included in Appendix C.

Alabama DCNR responded to a request for endangered and threatened species information and stated that no biological surveys have been performed at TUA I and that the closest sensitive species included in the DCNR database have been documented as occurring approximately 1.1 miles from the site; these species include the crystal darter and the fine-lined pocketbook mussel (Alabama DCNR 2004b). Further consultation with Alabama DCNR demonstrated that these species have been recorded in Uphapee Creek. However, there were no dates associated with the records and the current status of these species in Uphapee Creek and the associated unnamed tributary is unknown. Alabama DCNR stated these species occur in small to medium rivers, usually in water more than 60 centimeters deep with a strong current, and with expanses of clean sand and gravel. These species are vulnerable to siltation and other problems of pollution as well as water flow modifications. Localized populations are vulnerable to extirpation from single destructive events but are relatively tolerant of nondestructive intrusion. Heavy recreational use of habitat could potentially be disruptive (Alabama DCNR 2004b).

The USFWS responded to a request for endangered and threatened species information and stated that three mussel species, the southern clubshell, ovate clubshell mussel, and fine-lined pocketbook, still occur downstream of the confluence of the tributary with the Uphapee Creek (USFWS 2004b). Additionally, the USFWS stated that the project area is within the historic range of the red-cockaded woodpecker, which may be present if suitable habitat occurs within the project area (USFWS 2004b).

A more detailed summary of the habitat requirements by species is included below.

The crystal darter inhabits large rivers with strong currents over bottoms of bedrock, sandbars, fine gravel to clay-mud bottoms at depths of less than 1 meter to 5 meters. This species probably seeks out deeper waters during the day, moving into the shallows with waning light. The crystal darter displays an affinity for burying within the sand substrate with only their eyes protruding. The crystal darter prefers a more gravelly, small-pebbled substrate, though they have been caught in pure sand as well (Lutterbie 2004 and Katula 2004).

The habitat of the fine-lined pocketbook mussel includes both high and low gradient creeks and medium-sized rivers of moderate gradient and riffle. Sources indicate that the fine-lined pocketbook mussel generally inhabits small river and creek habitats and it has been found associated with swift flowing riffles and gravel-cobble substrates in the Conasauga River. It is found in sand and in gravel in Chewacla Creek, Tallapoosa River drainage; however, this species may have been eliminated from most river habitat throughout its range and currently appears to be restricted to creek habitat (NatureServe 2003 and Smith 1993).

The habitat of the southern clubshell includes highly oxygenated streams with sand and gravel substrate (NatureServe 2003). This species may be found in sandy and gravelly areas in the middle of the stream or in sandy areas along the margins of the stream. This species is known to occur in the Bogue Chitto River in the Alabama River drainage, but recent records could not confirm existence in either the Coosa or Cahaba river drainages, where it has been historically located (USFWS 2004b).

The habitat of the ovate clubshell includes moderate to high gradient large and medium-sized rivers or creeks with pools and riffles. The type locality for this species is small streams in Greene County, Alabama. Sources indicate that habitat modification, sedimentation, and water quality degradation have led to the decline of this species (NatureServe 2003). Currently, the species is known to occur in the Buttahatchee and Sipsey rivers in the Tombigbee River drainage; Blackwater Creek and Locust Fork in the Black Warrior drainage; and Chewacla Creek in the Tallapoosa drainage (USFWS 2004b).

The red-cockaded woodpecker's range is associated with open stands of southern pines, most commonly longleaf pines (*Pinus palustris*), with a minimum age of 60 to 80 years (USFWS 2004b). Cavities are excavated in living pines for roosting activities, and egg laying typically occurs during April, May, and June. Dense stands of hardwood forests are avoided by this species and foraging occurs in pine and pine-hardwood stands 30 years or older. The decline of this species is primarily attributed to the reduction of pine forests with trees 60 years and older and the encroachment of hardwood mid-story habitat due to fire suppression (USFWS 2004b). At TUA I, a pine plantation of unknown age and species is located east of the unnamed tributary that bisects the site (Pond & Company 2002a). This area was once farmland and is now used for timber harvesting. Additionally, habitat designated as bluff and slope forest is located south of the HCA at TUA I. Mature loblolly pines (*Pinus taeda*) and oak species 40 to 50 years old are located within the bluff and slope habitat (Pond & Company 2002a). This bluff and slope habitat is not considered preferred foraging habitat for the red-cockaded woodpecker due to the age of the trees present and the fragmented condition of the habitat, as the red-cockaded woodpecker requires large areas of forested habitat (Alabama Forestry Commission 1996). A mixed upland forest dominated by loblolly pine, water oak, and sweetgum is also present and located throughout TUA I (Pond & Company 2002a). This area is not preferred foraging habitat for the red-cockaded woodpecker due to the presence of deciduous plant species documented in the habitat. The red-cockaded woodpecker has not been documented to be present at TUA I.

Peregrine falcons are considered rare permanent residents in Alabama [South Alabama Birding Association (SABA) 2004]. Historically, peregrine falcons were found nesting on high, remote cliff ledges in mountainous areas of North America. Decimated by DDT in the past, peregrine populations have rebounded due to protection and captive breeding programs. Currently nesting peregrine falcons are often associated with tall building ledges and bridges in large cities. No nesting habitat (cliffs or tall buildings) exists at TUIAI for nesting peregrine falcons, making it unlikely that a peregrine falcon would be found on the site (SABA 2004, The Peregrine Fund 2004).

Bald eagles historically nested in the Tennessee Valley and along the Gulf Coast in Alabama, and are considered a rare permanent resident in the state. Individuals from the north also spend the winter in Alabama along the rivers and coastline. They require large open tracts of water to feed. TUIAI has no habitat that would support bald eagles, so it is very unlikely that bald eagles would be found on the site (Alabama DCNR 2004c).

### **3.2.3 Socioeconomic Resources**

This section discusses the socioeconomic environment at TUIAI including demographics (age distribution, population projections, educational attainment); economy (employment and housing); land use; environmental justice (ethnic composition and income distribution); recreational resources; aesthetic resources; noise; and energy requirements and conservation.

#### **3.2.3.1 Demographics**

Tuskegee, the county seat and largest city in Macon County, contains approximately half of the county's population. According to the 2000 U.S. Census, 11,846 residents live in the city of Tuskegee while the total population of Macon County is 24,105. Although the population of the county fell between 1980 and 1990 by 7.1 percent, this decrease slowed to only 3.3 percent between 1990 and 2000. The migration of people out of Macon County is responsible for this decline in population. Between 1980 and 1990, 12 percent of the population (3,225 inhabitants) moved out of the county, and 6 percent (1,497 people) departed between 1990 and 1995.

#### **Age Distribution**

In 2000, 25.2 percent of the population was under 18 years of age while 60.8 percent of the population was between 18 and 64, and 14.0 percent was over 65 years of age. Table 3-7

presents the age distribution of Macon County from 1980 through 2000 based on U.S. Census data.

**Table 3-7: Age Distribution for Macon County, Alabama 1980-2000**

<b>AGE DISTRIBUTION</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
Under 18 years of age	29.4%	26.6%	25.2%
Between 18 and 64 years of age	57%	58%	60.8%
Over 65 years of age	13.5%	15.4%	14.0%

Tuskegee University and Southern Community College are both located in Tuskegee. Tuskegee University has a current enrollment of more than 3,000 students; Southern Community College, 140 students (Tuskegee University 2004, Southern Community College 2004). Undoubtedly, the presence of Tuskegee University in Macon County contributes greatly to the number of people over 18 and under 65 years of age. As the university grows and expands in the coming years, one can expect the number of young and middle-age people in the county to increase as well, but overall total population is projected to decline (University of Alabama 2004). In addition, the presence of the Veterans Administration Hospital in Macon County contributes to the population of senior citizens and veterans in the county. In 2000, the civilian population of Macon County 18 years old and older was 17,999, and of those 2,092 (11.6 percent) were citizens with veteran status.

### **Population Projections 2000-2025**

Population projections for Macon County as determined by the Center for Business and Economic Research of the University of Alabama show a gradual attrition of the county population from 24,105 in 2000 to a projected 22,505 in 2025, a total loss of 6.6 percent of the county's population over 25 years (University of Alabama 2004).

### **Population Density and Distribution**

According to the Alabama County Data Book (1997), the percentages of the population residing in urban areas and rural areas were nearly equal. Overall, the county population density based on the U.S. 2000 Census was 40 people per square mile. There are 10,627 housing units with an average density of 17 per square mile [Coosa River Improvement Association (CRIA) 1997].

### **Educational Attainment**

The Macon County population consists of more than 25 percent with a high school diploma, 10.4 percent with a Bachelor's degree, and 8.4 percent with a graduate or professional degree.

### **3.2.3.2 Economy**

#### **Employment**

The Macon County civilian labor force comprises approximately 50 percent of the county population; 44 percent are employed and 6 percent are unemployed. Occupational information provided from the U.S. Census 2000 data for Macon County shows the largest percentage (30 percent) of residents are employed in management, professional, and related occupations. Twenty-three percent are employed in service occupations, 23 percent in sales and office occupations, and 15 percent are in production, transportation, and material moving occupations. Construction, extraction, and maintenance provide a little over 8 percent of the employment occupations; the remainder (less than 1 percent) is in agriculture, forestry, or fishing occupations. Major employers in Macon County are the Veterans Administration Hospital (1,300 employees, health care facility) and Tuskegee University (1,000 employees, educational institution). Median household income in Macon County in 1999 was \$21,180 (U.S. Census Bureau 2000a).

With Tuskegee University and the Veterans Administration Hospital, Macon County's economy largely depends on the service industry as well as its government labor force.

#### **Housing and Ownership**

Sixty-three percent of the 10,627 housing units in Macon County are single-family detached dwellings. Mobile home residences comprise 17 percent of the housing units, and 15 percent of the housing units are multiple family dwellings of more than three units. In 2000, of the 8,950 occupied residences, 6,019 (67.3 percent) were owner occupied. The other 2,931 (32.7 percent) percent were rental properties. Approximately 49 percent of the renters paid rent in the \$300.00 to \$750.00 per month range. The median value of owner-occupied housing units in 2000 was \$64,200 (U.S. Census Bureau 2000a).



### **3.2.3.3 Land Use**

#### **TUAI Land Use**

TUAI currently consists of nine historic structures, underground fuel storage facilities, paved aircraft areas, historic taxiway, a few curbs and roadbeds, and remnants of the network of walkways and roads. There were also recreational facilities located on site: two tennis courts that are now non-existent, and a golf course was built in the late 1950s, but there is no visual evidence of the course remaining. A chain-link fence now surrounds the HCA of TUAI (Pond & Company 2002a). TUAI is currently partially open to the public for visitation and NPS has set up a temporary visitor center (trailer) onsite. The HCA is closed to visitors but can be viewed from an overlook area near the temporary visitor center.

Starting in the 1960s, the Tuskegee University School of Veterinary Medicine used the site for animal research for a period of time. The interiors of several buildings, including Hangar Number Two, were altered to accommodate labs, offices, and operating rooms. Several fences and sheds were also constructed onsite for school purposes. No significant alterations were made to the exterior of the remaining historic structures.

Changes in surrounding land use have been moderate since the Tuskegee Airmen occupied TUAI. The parcels adjacent to TUAI consist mainly of agricultural and forested land, with the remaining being classified as mixed or residential land use (SCADC 2000). The Moton Field Municipal Airport occupies a large parcel (323 acres) to the north of the site. Moton Field Municipal Airport has 15 aircraft based onsite (14 single engine airplanes and one helicopter), and averages approximately 53 aircraft operations per day. The runway dimensions are 5,003 feet × 100 feet and it has a weight limitation of 28,500 pounds per wheel (AirNav 2003). Directly southeast of TUAI is a residential development and several large parcels. The Tuskegee University utilizes a parcel northeast of the site as a tree farm, and the Tuskegee National Forest is located approximately 1.5 miles to the east of TUAI.

#### **Regional Land Use**

The city of Tuskegee's land use is mainly agricultural or forested, according to the *2010 Comprehensive Plan* (SCADC 2000). The surveyed area consists of approximately 25,934 acres, of which 42.7 percent is classified as agricultural or forested. Mixed use comprises 26 percent of the city of Tuskegee's planning area, and the remaining is classified as industrial, commercial, residential, recreational, government, or institutional uses (SCADC 2000).

TUAI is located in Macon County, Alabama. Macon County is located in the east-central portion of the state, and is bordered by Elmore, Tallapoosa, Lee, Russell, Bullock, and Montgomery counties. The county seat is located at Tuskegee, which is also the site of Tuskegee Institute and Tuskegee University. Towns in Macon County include Tuskegee, Franklin, and Notasulga.

Macon County is composed of 611 square miles of land area and 2.7 square miles of water. Agricultural acreage in the county in 1997 comprised 127,334 acres (33 percent) of the county land area. The number of farms in the county declined 31 percent between 1982 and 1987. In 1997, the most recent year for which agriculture census data are available, only 300 active farms were left in Macon County, representing a decline of approximately 4 percent (USDA 1997). Major agricultural products from Macon County include cattle, calves, and other livestock and poultry, wheat for grain, cotton, soybeans, peanuts, hay/alfalfa, and silage. Crop sales accounted for 70 percent of the market value, and livestock sales accounted for 30 percent (USDA 1997).

#### **3.2.3.4 Environmental Justice**

*Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires Federal agencies to make achieving environmental justice part of its mission. Specifically, each agency must identify and address “disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations.” The intent is to prevent minority and low-income populations from being disproportionately affected by adverse human health and environmental impacts of Federal actions. Both the city of Tuskegee and Macon County have high percentages of minority and economically disadvantaged populations.

#### **Ethnic Composition**

Macon County has the highest non-white population of any county in Alabama. According to the 2000 U.S. Census, approximately 86.0 percent (20,740 people) of the county’s residents in 2000 were non-white. According to the 2000 Census, the population of Macon County was composed of 3,365 whites, 20,403 blacks (84.6 percent of the total population), 39 Native Americans, 92 Asians (or Pacific Islanders), 31 persons of other racial backgrounds, and 175 of two or more races. In the city of Tuskegee, African-Americans comprised 95.5 percent of the population in 2000, while 97.4 percent of the city’s population was non-white. The 2000 Census also showed that 644 people (2.9 percent) of the Macon County population speak Spanish at

home. From the 1990 Census to the 2000 Census, the number of county residents speaking languages other than English at home rose to 1,057 persons, comprising 4.7 percent of the Macon County population. The census data reveal an increase in Spanish speaking residents of 1.6 percent and an increase in those speaking languages other than English of 1.2 percent between 1990 and 2000.

### **Income Distribution**

According to the 2000 U.S. Census, the median household income in Macon County was \$21,180 in 1999. Within the city of Tuskegee, the median household income was \$18,889 in 1999. Poverty statistics from the U.S. Census are determined using poverty thresholds, which are based on income levels, family size, and the number of related family members under 18 years old within the household. A sizable portion (32 percent or 2,855 households) of the county's population reported living below the poverty level in 1999, and of these households, 35.7 percent consisted of single females and their families. The number of households living below the poverty level in the city of Tuskegee was 685, or 30 percent of the city's population, which closely resembles the county poverty levels. However, both county and city poverty levels are considerably higher than the percentage of households living below poverty levels within the state of Alabama (12.5 percent) and the United States (9.2 percent).

### **3.2.3.5 Recreational Resources**

#### **Regional**

According to a recent tourism task force annual report (Envision Montgomery 2004) for the region, tourism has grown to become the number one industry in Alabama accounting for \$6.1 billion and 128,000 jobs statewide. However, in 2001, Macon County tourism experienced a decrease of 4 percent from the previous year in revenue and employment (Envision Montgomery 2004).

The 10,358 acres of Tuskegee National Forest located just outside the city of Tuskegee offer recreational activities including boating, fishing, hunting, camping, hiking, mountain biking, picnicking, and wildlife viewing. Within the city of Tuskegee's planning area, there are currently 235 acres classified as recreational land use, including four parks and six community centers owned and maintained by the city that offer picnic areas, tennis courts, ball fields, and swimming pools for recreational activities (SCADC 2000). Tuskegee Lake (approximately 1 mile away from TUAI) and Chewacla State Park (10 miles distant, Lee County) provide

additional recreational facilities for use by Tuskegee and Macon County residents [Alabama Municipal Electric Authority (MEA) 2004]. Tuskegee Institute National Historic Site, which includes Booker T. Washington's home, and George Washington Carver Museum, the Tuskegee Human Rights and Multicultural Center, and Kirk's Old Farm Museum offer cultural recreation opportunities in Tuskegee and Macon County. White Oak Plantation is a full-service hunting and shooting resort [Alabama Bureau of Tourism and Travel (BTT) 2004]. Neighboring Montgomery County offers other recreational opportunities including the Montgomery Zoo, the Alabama Shakespeare Festival, the Civil Rights Memorial, and the Montgomery Museum of Fine Arts.

### **TUAI**

Currently, there are no recreational opportunities at TUAI, except for a few exhibits, a small auditorium, and a bookstore. There are no picnic or park areas for recreation, and the HCA is currently closed to visitors due to its deteriorating condition.

#### **3.2.3.6 Aesthetic Resources**

TUAI's current aesthetic resources are in poor condition, as no restoration or rehabilitation has been performed on any of the historic buildings. The grounds are maintained minimally in areas that are kept cleared. No landscaping or improvements have been performed in recent years. Several buildings were recently stabilized to ensure that further damage would not occur before completing rehabilitation and restoration of the site.

#### **3.2.3.7 Noise**

Current noise sources in the surrounding area are predominantly the result of human activities such as traffic from the local roadways and aircraft using the adjacent Moton Field Municipal Airport. The runway is located approximately 250 feet north of TUAI, and is 5,000 feet long and 100 feet wide (Pond & Company 2002a). Airport noise is described through type of flight operations, types of aircraft using the airport, flight paths and profiles, runway utilization, and information from noise monitoring locations around the airport. Moton Field Municipal Airport has 15 aircraft based onsite and averages approximately 53 aircraft operations per day (AirNav 2003). A secondary source of sound in the vicinity of the site is natural and includes birds and wildlife.

### **3.2.3.8 Energy Requirements and Conservation**

All NPS facilities and operations are to demonstrate environmental leadership by incorporating sustainable practices to the maximum extent practicable in planning, design, siting, construction, and maintenance. Park resources and values are not to be degraded to provide energy for NPS purposes. NPS adheres to all Federal policies governing energy and water efficiency, renewable resources, use of alternative fuels, and Federal fleet goals as established in the Energy Policy Act of 1992. NPS also complies with applicable Executive Orders, including *Executive Order 13123: Greening the Government Through Effective Energy Management*, *Executive Order 13031: Federal Alternative Fueled Vehicle Leadership*, and *Executive Order 13149: Greening the Government Through Federal Fleet and Transportation Efficiency* (NPS 2001b).

*Executive Order 13123: Greening the Government Through Efficient Energy Management* states that Federal agencies should “promote energy efficiency, water conservation, and the use of renewable energy products, and help foster markets for emerging technologies” (NPS Office of Policy 2004). Specific requirements to reduce energy and water consumption and emissions are presented in Executive Order 13123. Currently, the majority of park resources at TUA I are closed to the public; therefore, energy and water consumption is minimal. Energy efficiency or water conservation methods are currently not used, as the site has not been fully developed as a park unit.

According to *Executive Order 13031: Federal Alternative Fueled Vehicle Leadership*, all Federal agencies are to exercise leadership in the use of alternative fueled vehicles. The Executive Order states that, “to the extent practicable, agencies shall use alternative fuels in all vehicles capable of using them.” Currently, alternative fuel vehicles are not being used at TUA I.

### **3.2.4 Cultural, Historic, and Archaeological Resources**

TUA I was listed on the National Register of Historic Places in 1998 and consists of approximately 90 acres, which includes original structures and landscape elements. The site is managed and preserved in its entirety as a cultural resource of national significance, and all compliance procedures required by Section 106 of the National Historic Preservation Act (NHPA) of 1966.

## **Historic Structures**

Table 3-8 summarizes the existing condition of the extant and non-extant historic structures at TUAL. Figure 3-6 depicts the 1945 historic site plan for TUAL. Only 9 of the 15 original historic structures remain at the site: Hangar Number One, Skyway Club, Control Tower, Bath and Locker House, Warehouse/Vehicle Storage Building, Dope Storage Shed, Oil Storage Shed, Fire Protection Shed, and the Entrance Gate. Most of these structures have recently undergone stabilization beginning in 2001 (Pond & Company 2002a). The structures for which only footprints or no evidence remains include Hangar Number Two, Flight Commander's Office (Cadet Class and Waiting Room), Army Supply Building, Physical Plant Warehouse, Vehicle Maintenance Shed, and the Guard Booth (NPS Southeast Regional Office 1998). In 1989, a fire destroyed Hangar Number Two and the interior of the Control Tower.

## **Other Historic Features**

Other historic features that remain on the site include a reservoir, gasoline pits, underground fuel storage facilities, a paved aircraft area between Hangar One and Two, a historic taxiway, vehicle areas, and a few curbs and roadbeds. Many of the original infrastructure features are intact or have segments remaining, including the artesian well system, sanitary sewer system, and power sources. Remnants of the network of walkways and roads are also present; however, most of the asphalt surfaces have deteriorated. Portions of Chief Anderson Drive have been resurfaced. The road providing access to the adjacent Moton Field Municipal Airport is a post-war addition. There is also one small non-historic building located northeast of the site where Hangar Number Two and the control tower were located.

There were also two tennis courts on the site that are evidenced by a few remains and a clay lens underneath the existing grade. A golf course was built on the site in the late 1950s, but there is no visual evidence of the course remaining.

## **Historic Landscape**

The historic landscape contains minimal intrusions by non-historic elements. The historic open landscape has been slightly altered due to the addition of an interstate (I-85) to the north and a residential subdivision to the southeast; however, most of the surrounding parcels are still rural and undeveloped as they were in the 1940s. Agricultural fields that surrounded the site are now forested, and overgrown vegetation covers most of the site due to lack of maintenance in certain areas (NPS Southeast Regional Office 1998). The operational airfield located adjacent to TUAL

is not owned by NPS. It is owned and operated by the city of Tuskegee as Moton Field Municipal Airport. The HCA is mowed on a regular basis. The perimeter areas are now densely vegetated with invasive species diminishing the open field landscape that was historically present at the site.

### **Archaeological Resources**

Southern Research Historic Preservation Consultants, Inc. (SRHPC) conducted an archaeological survey from April 29 to May 3, 2002, to determine the exact locations of non-extant buildings and hidden landscape features. Shovels or hand probes were used where remnants of buildings or other features were expected to be found, as well as scraping the surface of the soil to uncover curbs and sidewalks. Excavations revealed broken pieces of concrete, bricks, and glass where the building footprints were expected to be located. During the survey, support piers and curb locations for the Flight Commander's Office (Cadet Class and Waiting Room) and the Physical Plant Warehouse were found. Piers potentially for the Army Supply Building were located but could not be confirmed. For these buildings, it may be possible to extrapolate the dimensions of the structures from the pier locations using photographs and architects' drawings. The suspected site of the Vehicle Maintenance Shed was inaccessible at the time of the survey. The Guard Booth has been recorded in several historic locations, which were all surveyed, but nothing of significance was discovered. The Guard Booth at one time appeared to be located where the paved Chief Anderson Drive is now, so the site was inaccessible at the time of the survey (SRHPC 2002).

Other features surveyed and mapped include the pathway system, artesian well system, tennis courts, a pond/reservoir, the original electrical power pole network, and a fire hydrant. During these surveys, curbs and sidewalks were uncovered, and parts of the well system were cleared of vegetation and uncovered. Poles and other objects associated with the tennis courts and a clay layer of soil were found in the historic location of the courts. The pond appears to have filled up with sediment and is no longer usable for drainage. Utility poles and wires were found on the site, and missing poles were mapped in their historic locations (based on photographs). An old cast-iron fire hydrant was located near Tennis Court #1 in an area that was previously used for dumping (SRHPC 2002).

**Table 3-8: Extant and Non-Extant Historic Structures at Tuskegee Airmen National Historic Site<sup>2</sup>**

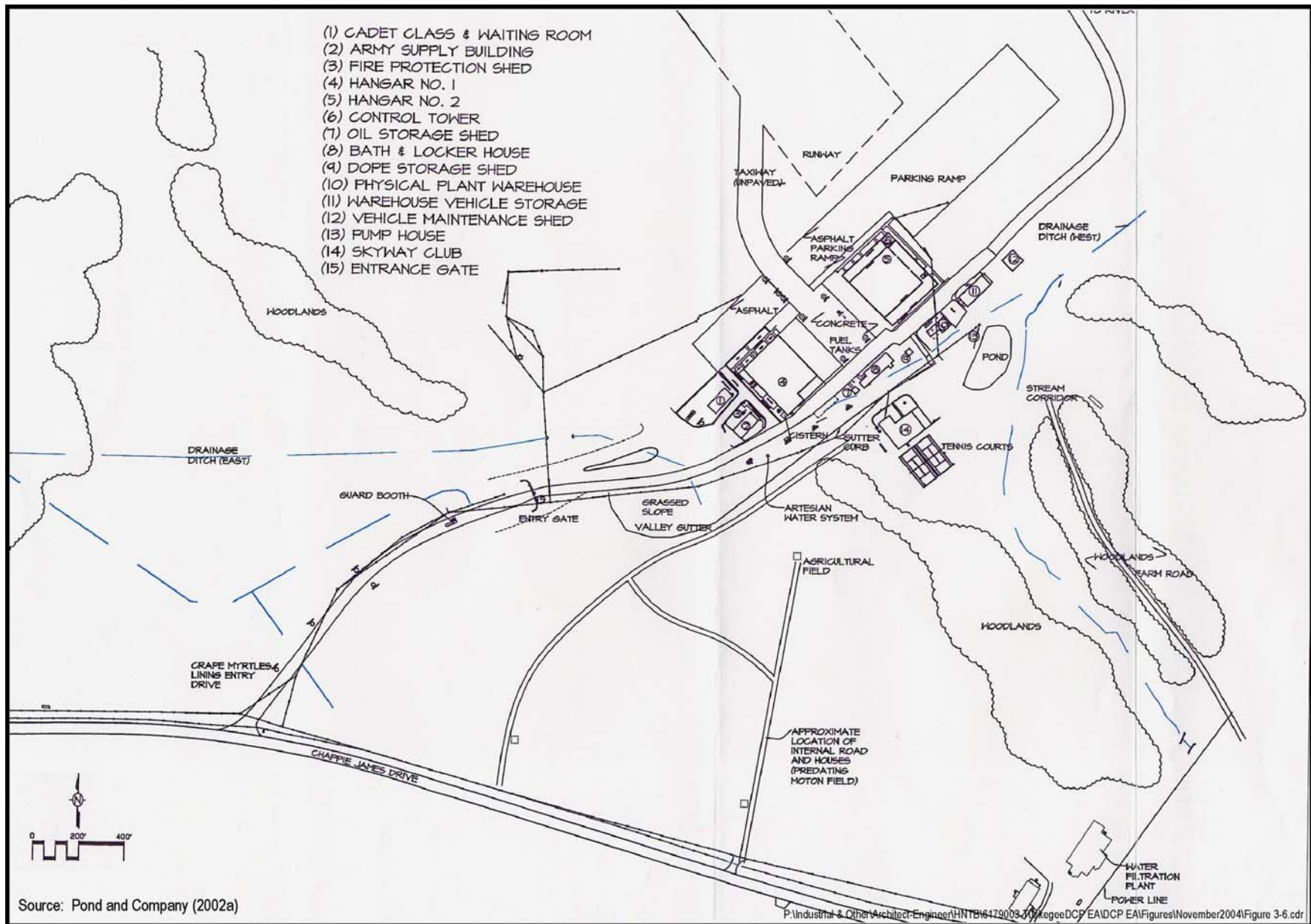
Building	Total Floor Area (square feet) <sup>3</sup>	Existing Condition and Use of Interior Spaces	Potential for alternate use of interior spaces		
			Can support a variety of interpretation programs	Incorporation of interpretive media displays	For restoration, reconstruction, or rehabilitation with appropriate historic furnishings
Hangar Number One	13,128	Good – closed to public	Yes	Yes	Yes – restoration on exterior and rehabilitation on interior
Skyway Club	4,453	Good – recently stabilized; closed to public	Yes	Yes	Yes – restoration on exterior and rehabilitation on interior
Control Tower	337 (remaining); 1,348 (original)	Poor – destroyed by fire, only exterior remains; closed to public	Yes	Yes	Yes – restoration on exterior and rehabilitation on interior
Bath & Locker House	1,427	Poor – closed to public	May be used for NPS administrative functions	No	Yes – restoration on exterior and rehabilitation on interior
Warehouse/Vehicle Storage Building	1,801	Poor – heavily altered from original structure; closed to public	May be used for NPS maintenance equipment	No	Yes – rehabilitation
Dope Storage Shed	122	Good – closed to public	No – small space	No – small space	Yes – stabilization of exterior
Oil Storage Shed	121	Good – closed to public	No – small space	No – small space	Yes – stabilization of exterior
Fire Protection Shed	54	Good – closed to public	No – small space	No – small space	Yes – stabilization of exterior
Entrance Gate	69' (L) x 11' (H)	Fair – features missing; closed to public	N/A	N/A	Yes – rehabilitation
Hangar Number Two	19,076 (includes Control Tower)	Non-extant	Yes	Yes	Yes - reconstruction
Flight Commander's Office (Cadet Class and Waiting Room)	1,056	Non-extant	No	No	Yes – construct as ghost structure
Army Supply Building	1,151	Non-extant	No	No	Yes – construct as ghost structure
Physical Plant Warehouse	N/A	Non-extant	No	No	Yes – construct as ghost structure
Vehicle Maintenance Shed	N/A	Non-extant	No	No	No – insufficient historic information to create ghost structure
Guard Booth	N/A	Non-extant	No	No	Yes – construct as ghost structure

<sup>2</sup> This table includes the 15 historic structures in the Historic Core Area. There is one non-historic structure in the HCA that would be removed from the site.

<sup>3</sup> Pond & Company 2002b.



Figure 3-6: 1945 Historic Site Plan



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## **Ethnographic Resources**

Ethnographic resources include, but are not limited to, properties that are eligible for the National Register of Historic Places and properties that contain sites, structures, objects, landscapes, oral traditions, human communities, behavioral patterns, and important places without surviving structures. In addition to places and objects identified in surveys and oral histories by the Tuskegee Airmen, the ethnographic resources entail the memories and recollections of people who worked as support personnel, university faculty, and students. Other resources that would reflect the time period and relay important information would include newspapers, college yearbooks, campus and airfield newspapers, newsletters, photographs, church bulletins, and memorabilia owned by individuals who interacted with the airmen, or the airmen themselves.

TUAI has ethnographic resources that illustrate the importance of the Tuskegee Airmen's role in World War II. In addition to the 1,000 African-American military pilots that trained there and distinguished themselves in World War II, more than 10,000 support personnel and their families were also involved in the training. They all are a valuable resource to the site's interpretation. The aviation training that the Tuskegee Airmen received has been a significant part of U.S. history and has driven the formation of numerous groups such as the Tuskegee Airmen Incorporated. Locally, the Tuskegee University is itself a prominent part of American history, and its connection with the Tuskegee Airmen and Moton Field is a significant ethnographic resource.

Ethnographic resources (both interviews and archival collections) can be assembled to interpret the meaning of TUAI and the changes that occurred in American culture during World War II. Through these ethnographic resources, the public can more fully understand the lasting effects of the airfield on Tuskegee University, the city of Tuskegee, the African-American community, the South, and on all Americans. These resources can be found in the accounts of the survivors who lived through the experience. These ethnographic resources can also provide insight into everyday life that occurred at the site.

## **Interpretation and Museum Operations**

Interpretation and museum programs help visitors learn about the importance of the Tuskegee Airmen's role in World War II and the U.S. military. Table 3-8 summarizes the potential for use of interior space for interpretative programs and media displays for the buildings at TUAI.

Portions of the site are currently open to the public for visitation, with the HCA closed to the public pending rehabilitation.

TUAI still maintains a strong sense of place and association with its historic use. There are opportunities for interactive interpretive experiences within TUAI, as information is currently available about the facilities and the people who worked and lived on the site.

There are currently no opportunities for solitude or a contemplative experience as this site is relatively new to the NPS system and has not developed into a full-scale operation. However, the proposed action plans for future trails and picnic areas that would offer a solitary experience.

Currently, NPS does not provide tours or personal interpretation to visitors of TUAI; however, the proposed plan includes tours and interaction with NPS personnel.

### **Research of Tuskegee Airmen**

NPS is currently conducting interviews with persons historically affiliated with the Tuskegee Airmen. Approximately 1,500 interviews are planned, of which about 650 have been completed. The recordings will be used in interpretive displays and the proposed museum planned for TUAI, so that visitors will be able to directly listen to the Tuskegee Airmen describe their military experiences. All interviews and data collected will be stored in the TUAI archives for future researchers to access (NPS 2004c).

### **3.2.5 Hazardous Materials**

A Level I assessment of TUAI was conducted by NPS in July 1999 (Weston 2001). At that time, several areas of concern associated with past activities at the site were identified. These included a former lagoon area near the Skyway Club building, the storage and use of petroleum products and solvents during use as an Army air base, storage and use of limited quantities of chemicals and biological materials by the Tuskegee University School of Veterinary Medicine, and potential offsite contamination by petroleum products and pesticides.

NPS also conducted historic review of past storage, use, waste disposal practices, and medical research activities including interviews with representatives of NPS and Tuskegee University (Weston 2001). The results of the interviews determined that no biological or pathological agents were used at the site that would be considered a health hazard to humans during the tenure of the veterinary school. All chemicals from the Skyway Club and the Bath and Locker House

and biological waste were removed from the site (Williams 1999). The Swine Research Area of the Moton Research Area operated by Tuskegee University's School of Veterinary Medicine was abandoned in 1989 and burned in 1992. No infectious disease research was conducted at the site and does not constitute a hazard (Webster 1999).

Under the Defense Environmental Restoration Program (DERP), USACE conducted a preliminary investigation at TUAJ on October 12, 1999 (Ennaco1999). USACE determined that remedial action was necessary on six abandoned underground storage tanks located on the site. The material from the tanks was removed and the tanks were filled (Brown 2004). Alabama DEM requires no further subsurface investigations or corrective actions in regard to the underground storage tanks located on the site as long as no water wells will be located within 500 feet of the former tank pits (Pierce 2001).

A Level III (Phase II) investigation was conducted at the site in 2001 by NPS that included groundwater sampling for analytical testing (Weston 2001). Sixteen soil borings that sampled groundwater were collected at the former airfield areas, Skyway Club, former lagoon area, and locations offsite. Depths to groundwater at the site ranged between 5 and 15 feet below ground surface (bgs). Samples were tested for diesel/gasoline range organics (DRO/GRO), volatile and semivolatile organic compounds (VOCs and SVOCs), pesticides/herbicides, and metals (Weston 2001). The results from groundwater samples collected from the former lagoon area indicated the presence of one VOC, carbon disulfide, in both samples. Carbon disulfide is a compound that can be used as a solvent and is also present in some agricultural fumigants. Samples collected from offsite areas indicated the presence of both carbon disulfide and GRO. No other groundwater contaminants above the laboratory reporting limits were found in any of the other sample sites, including the water sample from the artesian spring (Weston 2001).

Additionally, a letter dated August 22, 2001 from Alabama DEM states that some lead contamination of the groundwater is present at the site; but, a comparison of the site concentrations to Alabama Risk Based Corrective Action Tier 1 screening levels did not indicate a need for further corrective actions. Alabama DEM has specified that any future well locations should be at least 500 feet from the former tank pits (Pierce 2001).

In November 2003, environmental sampling and an underground storage tank (UST) investigation were conducted at the site by Weston Solutions, Inc. at the request of the NPS (Weston 2003). This investigation was conducted to address concerns related to former activities at the airfield associated with fueling and storage of aircraft, activities associated with veterinary/medical research conducted by Tuskegee University at the site, and offsite activities.

Seven areas within the HCA were targeted for subsurface soil samples for the following compounds: VOCs, SVOCs, asbestos, metals, and radiological (gross alpha, beta, gamma) testing. These areas were located in the vicinity of the parachute drying tower, the warehouse, the livestock holding pen, and the free run animal pens. Results of this analysis indicate that no USTs were found as part of this investigation, no radiation above background levels was found in the samples, no VOCs or SVOCs were found in the samples above EPA Region 9 reporting limits, no concentrations of metals were found in the samples above EPA Region 9 reporting limits, and no asbestos was detected in any of the collected samples. Weston recommended that no remedial activities or further investigative activities were necessary for the seven areas sampled as part of this analysis.

### **Wastewater Treatment Systems**

During the Level I Assessment for TUAJ conducted by NPS, two structures that appeared to be wastewater treatment systems for the facility were identified (Weston 2001). The larger unit (1) is located northwest of Hangar One, and the smaller unit (2) is located southwest of the Warehouse Building. The structures historically accepted surface water, wash waste, and domestic waste prior to discharge to surface drainage systems. Because these units are connected to the onsite stormwater systems and floor drains, petroleum products and cleaners used during the operation of the facility could have been discharged into the wastewater treatment system. An additional concern included the use of the units for disposal of laboratory wastes.

One wastewater and one sludge sample from each of the two units was collected from the tanks within the structures of Units 1 and 2 for analytical testing. The analytical data for the wastewater samples did not indicate concentrations of any parameters above the laboratory detection limits, but the sludge samples indicated elevated concentrations of VOCs, SVOCs, DRO/GRO, and metals. The parameters detected in the sludge samples most likely can be attributed to the historic use of petroleum products at the site and past research activities at the University (Weston 2001). Because the wastewater and downgradient sediment samples from Units 1 and 2 did not indicate elevated concentrations for any of the parameters, the contaminants in the sludge are most likely confined to the tank systems (Weston 2001). Material from these tank systems has been removed and the tanks have been filled (McDarmont 2004).

### **3.2.6 Visitor Experience and Park Operations**

This section discusses the current visitor experience and park operations at TUAJ.

#### **Visitor Use**

The HCA is currently closed to visitors pending rehabilitation and site development. A temporary visitor center with museum exhibits, a small bookstore, and a 30-seat auditorium for viewing films on the history of the Tuskegee Airmen is available for visitors. These facilities are located adjacent to the parking lot off Chappie James Drive. Additionally, visitors are able to view the site from the hilltop where the visitor center is located (NPS 2004c). TUAJ currently has approximately 30,000 visitors annually.

#### **Park Operations**

Factors in this category describe the existing conditions related to park operations and administration potentially impacted by implementation of the alternatives.

#### ***Utilities***

The following utilities currently serve the visitor center at TUAJ:

- Electricity – Alabama Municipal Electric Authority
- Water – city of Tuskegee
- Natural Gas – Alagasco
- Sanitation – city of Tuskegee

#### ***Personnel***

Currently, the staff at TUAJ consists of two full-time NPS employees and two volunteers. The full-time staff is involved with interpretation and resource education. They provide the visitors with information about the site and the history of the Airmen. The volunteers contribute time in assisting with a variety of services including interpretive program assistance, visitor services, and administration support. Additionally, staff from the Tuskegee Institute National Historic Site supports the current staff at TUAJ as needed until the site is developed into a full-scale operation.

### ***Parking***

Parking currently consists of a single lot adjacent to the temporary visitor center.

### ***NPS Cooperation and Partnerships***

Partnership agreements and cooperative relationships are often formed among NPS units and the surrounding jurisdictions and area groups to facilitate a variety of activities. Cooperative activities in areas of natural resource management, safety, and/or maintenance allow the NPS to enhance operational efficiency at the site and to provide the neighboring constituency with additional opportunities.

The primary partners for the implementation of TUIAI are the National Park Service, Tuskegee University, and the Tuskegee Airmen, Inc. In addition, NPS personnel have been coordinating planning efforts with representatives from the city of Tuskegee, Moton Field Municipal Airport, Alabama state representatives, Tuskegee National Forest, Army National Guard, Fort Bragg, Little Texas Volunteer Fire Department and Fort Rucker.